

U.S. Patent Application Serial No. 10/648,356  
Response filed August 24, 2006  
Reply to OA dated May 16, 2006

### **REMARKS**

Claims 8 and 16 - 18 have been amended in order to more particularly point out, and distinctly claim the subject matter to which the applicants regard as their invention. The applicants respectfully submit that no new matter has been added. It is believed that this Amendment is fully responsive to the Office Action dated May 16, 2006.

Claims 8 - 20 are currently pending, and presently being examined in this patent application, claims 1 - 7 having been previously canceled.

The claim objection, found in the previous Office Action, has been removed in view of the previously filed amendment to the specification.

However, the Examiner continues to reject the claims in substantially the same manner as in the previous Office Action. The rejections are discussed in detail below.

The Examiner again rejects claim 8 under 35 USC §112, alleging that a thickness of a third layer being smaller than 1/4 wavelength cannot be determined as the wavelength is not defined.

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Also, the Examiner again rejects claims 16 - 18 under 35 USC §112, alleging that claims that merely set forth physical characteristics desired in an article, and not setting forth specific compositions which would meet such characteristics, are invalid as being vague and indefinite.

The applicants respectfully request reconsideration of these rejections.

As indicated above, claims 8 and 16 - 18 have been amended in order to more particularly point out and distinctly claim the subject matter to which the applicants regard as their invention, and in order to correct certain informalities therein, including those pointed out by the Examiner..

In view of the above, the withdrawal of the outstanding rejection under 35 USC §112 is in order, and is therefore respectfully solicited.

The Examiner rejects claims 8 - 14 and 20 under 35 USC §102(b) as being anticipated by U.S. Patent Application Publication No. 2001/0031365 to Anderson. The applicants respectfully request reconsideration of this rejection.

The Examiner alleges that Anderson discloses alternating layers having high and low indexes of refraction materials, which include titanium oxynitride, magnesium fluoride and silicon oxide. The Examiner further alleges that thicknesses of less than 1/4 of some wavelengths are shown in

examples on page 7 of Anderson.

The applicants respectfully request reconsideration of this rejection.

The applicants' claimed invention, as now recited in claim 8, is directed to an optical semiconductor device, which includes an optical multilayer film that is located on a light incident plane or a light emitting plane of an optical semiconductor chip, the optical multilayer film having a laminated structure that at least includes a first layer, a second layer containing titanium oxynitride as a main component, and a third layer containing magnesium fluoride as a main component. As now set forth in claim 8, the first layer has a different refractive index from that of the second layer or the third layer, the third layer being most removed from the light incident plane or the light emitting plane. As now further set forth in claim 8, the laminated structure has a plurality of reflection planes, the thickness of the third layer being less than  $1/4$  of the wavelength of light incident to the light incident plane or of light emitting from the light emitting plane converted into an optical distance. Tensile stresses and compressive stresses of the first, second, and third layers substantially cancel each other.

Claim 8 now includes the significant distinguishable structural arrangement of the claimed optical semiconductor device, which is that the claimed third layer that is most removed from the light incident plane or the claimed light emitting plane contains magnesium fluoride as a main component.

On the other hand, all of Examples 1 - 9 disclosed in Anderson have the outermost layers of  $\text{SiAl}_x\text{O}_y$ . The applicants refer the Examiner to paragraph 0017 of Anderson, where it is disclosed that magnesium fluoride may be used as low index thin layers. However, Anderson fails to teach or suggest that the layer most removed from the light incident plane or the light emitting plane contains magnesium fluoride as a main component..

In view of the above, not all of the claimed elements, as now set forth in claim 8, are found in exactly the same situation and united in the same way to perform the identical function in Anderson's device. Thus, there can be no anticipation under 35 USC §102(b) of the applicants' claimed invention, as now set forth in claim 8, based on Anderson.

Furthermore, claims 9 - 14 and 20 depend on claim 8, and further limit the scope of claim 8. Thus, at least for the reasons discussed above with respect to claim 8, claims 9 - 14 and 20 should now be similarly allowable.

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Accordingly, the withdrawal of the outstanding anticipation under 35 USC §102(b) based on U.S. Patent Application Publication No. 2001/0031365 to Anderson is in order, and is therefore respectfully solicited.

As to the outstanding obviousness rejections, first, the Examiner rejects claim 15 under 35 USC §103(a) based on Anderson in view of U.S. Patent No. 6,222,967 to Amano.

In addition to the Examiner's alleged disclosure of Anderson, as discussed above, it is further alleged by the Examiner that Amano discloses a resin sealing structure of an optical module.

The applicants respectfully request reconsideration of this rejection.

It appears as though Amano may disclose a resin seal. However, Amano does not provide the above-discussed deficiencies in the teachings of Anderson in regard to canceling the stresses of the layers. Accordingly, because claim 15 depends on claim 8, the applicants' above arguments in support of claim 8 are similarly applicable to claim 15.

Second, the Examiner rejects claims 16, 17 and 19 under USC §103(a) as being unpatentable over Anderson, and third, the Examiner rejects claim 18 under 35 USC §103(a) as being unpatentable over Anderson in view of Amano.

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The Examiner alleges that Anderson discloses optical multilayer films of alternating high and low index of refraction materials, and because the composition and structure of the present device is the same as that disclosed by Anderson, the device of Anderson, according to the Examiner, would inherently exhibit the claimed properties (tensile stresses and compressive stresses canceling each other).

The applicants respectfully request reconsideration of this rejection.

As discussed above, Anderson is silent as to canceling tensile stresses and compressive stresses of the layers. Combining different layers to result in the stresses canceling would only be by chance since Anderson does not disclose or suggest how to accomplish canceling of the stresses.

As to the secondary reference of Amano, although such reference may disclose a resin coating material, the Amano reference does not supplement the above-discussed deficiencies or drawbacks in the teachings of Anderson in failing to fully meet the applicants' claimed invention, as now recited in claim 16 from which claim 18 depends.

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In view of the above, the suggested teachings of the combined references would still fall far short in fully meeting the applicants' claimed invention, as now recited in the amended claims filed herewith. Thus, a person of ordinary skill in the art would not have found the applicants' claimed invention obvious under 35 USC §103(a) based on Anderson, singly or in combination with U.S. Patent No. 6,222,967 to Amano.

Accordingly, the withdrawal of the outstanding obviousness rejections under 35 USC §103(a) based on Anderson, singly or in combination with U.S. Patent No. 6,222,967 to Amano, is in order, and is therefore respectfully solicited.

In view of the aforementioned amendments and accompanying remarks, claims, as amended, are in condition for allowance, which action, at an early date, is requested.

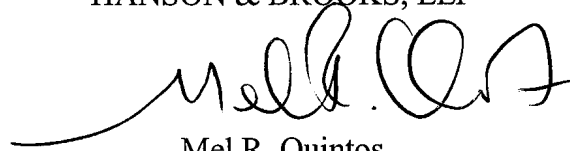
If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact the applicants' undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

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In the event that this paper is not timely filed, the applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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